

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-10. (Cancelled)

11. (Currently Amended) A method for detecting a nucleic acid sequence comprising a mutation in the FMO3 gene of an a bovine animal, ~~with the exception of humans~~, where the mutation will cause an alteration in the metabolism of trimethylamine leading to a fish off-flavour in a food product of the animal or its offspring, wherein the method comprises:

- (a) obtaining a nucleic acid sample from the animal; and
- (b) determining the presence in said nucleic acid sample of a nucleic acid sequence encoding a mutated FMO3 polypeptide, wherein the mutation is a R238X mutation of the polypeptide sequence SEQ ID NO:15.

12. (Previously presented) A method for detecting a nucleic acid sequence according to claim 11, wherein said nucleic acid sequence is detected by

- (a) contacting said nucleic acid sample with a nucleic acid probe spanning said mutation under conditions of specific hybridisation between said probe and the mutant sequence to be detected; and
- (b) detecting the hybridisation complex.

13. (Currently Amended) A method according to claim 11, wherein the presence of the nucleic acid sequence encoding said mutant polypeptide is determined by contacting the nucleic acid sample with a nucleic acid fragment selected from the group consisting of:

(i) a specific fragment of a nucleic acid sequence encoding a polypeptide which is a flavin-containing monooxygenase 3 (FMO3), wherein said FMO3 is ~~a polypeptide comprising at least a sequence having at least 85% identity with the polypeptide sequence SEQ ID NO:15,~~

(ii) SEQ ID NO:9,

(iii) SEQ ID NO:10,

(iv) SEQ ID NO:11,

(v) SEQ ID NO:12,

(vi) SEQ ID NO:16,

(vii) SEQ ID NO:17, and

(viii) SEQ ID NO:18.

14. (Previously presented) A method according to claim 11 which further comprises PCR amplification from the nucleic acid sample, of a sequence comprising at least the portion of the FMO3 sequence wherein the mutation is to be detected.

15. (Currently Amended) A method according to claim 11, wherein the presence of the nucleic acid sequence encoding said mutant polypeptide is determined by contacting the nucleic acid sample with a nucleic acid fragment which specifically hybridises ~~under stringent conditions~~ with a nucleic acid sequence encoding a polypeptide which is a flavin-containing monooxygenase 3 (FMO3), wherein said FMO3 is ~~a polypeptide comprising at least a sequence having at least 85% identity with the polypeptide sequence SEQ ID NO:15.~~

16. (Currently Amended) A method according to claim 11, wherein the presence of the nucleic acid sequence encoding said mutant polypeptide is determined by contacting the nucleic acid sample with a nucleic acid fragment which specifically hybridises ~~under stringent conditions~~

with (i) a nucleic acid sequence comprising at least a portion of a nucleic acid sequence encoding a polypeptide which is a flavin-containing monooxygenase 3 (FMO3), wherein said FMO3 is a ~~polypeptide comprising at least a sequence having at least 85% identity with the~~ polypeptide sequence SEQ ID NO:15, and up to 500 kb of a 3' and/or a 5' adjacent genomic DNA sequence, or (ii) the complement thereof.

17. (New) A method according to claim 11, wherein the nucleic acid sample is a sample of genomic DNA from the animal.